"Catabatic winds" refer to the flow of air caused by temperature changes as the sun moves across the sky. Typically the day begins calm and cool, and the sun rises in the sky to the east. As the sun shines on eastward-facing slopes, the ground begins to heat up and warms the air next to it. As that air warms, it begins to flow uphill when it's heated enough to overcome inertia and any atmospheric inversion that's present. On launch, we begin to see the flags fluttering a bit and feel a breeze blowing up the hill.

As the day progresses the sun moves higher in the sky and begins to warm up westward-facing slopes too. On a warm summer day, you may have air flowing up all sides of the mountain like a huge chimney. As the heating is cumulative, you may find that some slopes are going to produce generally stronger lift....typically the westward-facing ones, which get full sun exposure during the hottest part of the day in mid-afternoon.

Toward evening, the sun moves lower into the western sky. The west-facing slopes are still getting some heat from the sun even though it's at a lower angle, but the eastward-facing slopes are in full shadow. Now the reverse begins to happen; the eastward slopes radiate heat out into the "cold" blue sky, and the ground cools off rapidly. This cools the air, which now becomes more dense and begins to flow *down* hill. This can give rise to late-evening "wonder winds" or "glass off", as the cold air sliding down the eastward faces pools in the valley below, and lifts the warm air on the valley floor. It also causes dramatic shifts in wind direction compared to a few hours earlier. When pilots say "it's gone catabatic", they're talking about this reversal of flow caused by the cooling of shaded slopes.

"Ground effect" is a completely different thing. When pilots refer to ground effect, they're talking about the reduction in drag that takes place when an aircraft is less than a wingspan above the surface. The airplane flies more efficiently at just a few feet above the ground. This is because the ground surface disrupts the vortex flow at the wing tip, which is an unavoidable consequence of having an airfoil with higher pressure below and lower pressure above. In essence, the air "leaks around the corner" of the end of the wing. This gives rise to a horizontal tornado-shaped vortex at the wing tip, and the energy which goes into producing it is lost as "induced drag".

When the wing is close to the surface, the vortex is greatly reduced by interaction with the ground. This reduces the net energy lost to stirring up the air, and thereby produces better performance. In the case of a glider, it shows up as a longer ground-skim, compared to what you'd expect at a higher altitude.

Commercial jets (and even hang gliders) combat this induced drag by adding "winglets" that stick up at the tips, to break up some of the vortex. You'll see them on newer jets, sometimes a single pointing up, sometimes a double that goes up and down. You can also combat this loss by using a longer, skinnier wing, compared to a short wing with a deep chord. That's why high performance sailplanes have those very long, very short chord wings. It's a tradeoff with maneuverability though....all that mass way out on the long wing makes the aircraft slower to roll. A winglet reduces the vortex without putting so much mass out on a long moment arm.

Confused yet?

MGF